

Remarks

Initially, Applicants would like to thank the Examiner for his careful review of the application and for indicating that claims 12 and 34 contain allowable subject matter. The Examiner has objected to claim 11 and has rejected claims 1-11 and 13-33. Applicants have amended claim 11 to provide the proper antecedent basis and request that the objection be withdrawn. Applicants have also amended claims 5, 26, and 30 to correct matters of form and to provide antecedent basis where necessary. Furthermore, Applicants traverse the rejection of claims 1-11 and 13-33 and assert that these claims are allowable over the cited art as set forth in detail below.

Rejections Based on Peyerl

The Examiner has rejected claims 1, 4, 5, 9-11, 13, 16, 17, 19-22, 24, 25, 28, and 29 under 35 U.S.C. 102(b) as being anticipated by Peyerl, U.S. Pat. 6,272,441. Furthermore, the Examiner has rejected claims 2, 3, 8, 14, and 15 under 35 U.S.C. 103 as being unpatentable over Peyerl in view of either Sunter, U.S. Pat. 6,396,889 or Handel, U.S. Pat. 5,943,429.

Initially, Applicants point out that Peyerl is more accurately classified as a 35 U.S.C. 102(a) reference as the present application was filed within one year after the issuance of Peyerl. Furthermore, Applicants assert that Peyerl fails to teach the recitations of all claims 1-34, and in particular claims 1, 4, 5, 9-11, 13, 16, 17, 19-22, 24, 25, 28, and 29 that are rejected as being anticipated.

Anticipation of Claims 1-23

Independent claims 1, 13, and 19 recite that a variance record is constructed and that a response characteristic is obtained based upon a mathematical relationship of a response function to the variance record. Peyerl does not disclose creating a variance record of a measurable quantity of the measured output signal as recited in claims 1, 13, and 19. Furthermore, Peyerl does not disclose obtaining a response characteristic based on a mathematical relationship of the variance record to a response function.

To the contrary, Peyerl is focused on determining the impulse response $g(t)$ by providing an input $x(t)$ or $m(t)$, measuring an output $y(t)$, and then performing a cross-correlation of the input and measured output to find $g(t)$. There is no discussion of creating a variance record in Peyerl and utilizing the variance record and its mathematical relationship to a response function.

Instead, Peyerl specifically teaches at col. 11 that any systematic errors or deviations from the ideal that are determined are eliminated. Thus, as opposed to recording the variance from the expected value for the measurements and then utilizing the variance record, Peyerl teaches that such deviation should be eliminated from consideration. Then, Peyerl utilizes the cross-correlation of input to measured output, as opposed to the variance record, to then find the impulse response $g(t)$. It should be noted that merely measuring a value of an output signal is not measuring variance of the quantity being measured so as to construct a variance record of that measured quantity.

Therefore, Peyerl does not anticipate claims 1, 13, and 19 as Peyerl fails to teach that a variance record is constructed and that a response characteristic is obtained based on the variance record. For at least these reasons, claims 1, 13, and 19 are patentable over Peyerl. Dependent claims 2-12, 14-18, and 20-23 are also patentable over Peyerl for at least this reason.

The dependent claims that have been rejected as being anticipated are allowable over Peyerl for additional reasons as well. For example, claims 4 and 16 recite that transfer function parameters are manipulated to fit a variance model to the variance record, and Peyerl has no variance record or a variance model that is fit to the variance record. Claim 5 recites that the variance model is fit to the variance record by manipulating a natural frequency and damping factor of the transfer function, and Peyerl only teaches selecting a frequency of the signal generator 30 and damping factor of a damping circuit 33 of the signal generator 30, as opposed to finding these values for the linear system under test.

Anticipation of Claim 24

Claim 24 also recites that a variance record of a measurable quantity is constructed. However, claim 24 further recites that a model is fit to the variance record based set of data by manipulating parameters to find a best fit. As discussed above, Peyerl does not disclose constructing a variance record but instead describes eliminating any deviation or systematic error. Furthermore, as Peyerl does not construct or otherwise provide for a variance record, Peyerl does not disclose fitting of a model to the variance record by manipulating parameters to find a best fit.

Rather than fitting a model to a variance record to find parameters of a response function, Peyerl utilizes cross-correlation of the input and measured output to find the impulse response such that a variance record is not necessary. Because Peyerl fails to teach constructing a

variance record and manipulating parameters of a model to find a best fit the variance record, claim 24 is patentable over Peyerl. Dependent claims 26 and 27 are patentable over Peyerl for at least this reason.

Anticipation of Claim 28

Claim 28 recites that a variance record is constructed, that a response function is estimated by fitting a model to the variance record, and that a residue of the fitting is measured to find an error estimate. Peyerl fails to disclose constructing the variance record, fitting the model to the variance record, and measuring a residue of the fitting.

To the contrary, Peyerl teaches that the deviations from the ideal are eliminated rather than constructing a variance record. Furthermore, as Peyerl fails to construct a variance record, Peyerl fails to fit a model to the variance record and fails to measure a residue of fitting. As discussed, Peyerl has no need for the variance record as the impulse response is found by the cross-correlation of the input and measured output. As Peyerl fails to fit a model to a variance record, Peyerl has no need to determine a residue of such fitting. Accordingly, claim 28 is patentable over Peyerl. Dependent claims 29-31 are patentable over Peyerl for at least these reasons.

Obviousness of Dependent Claims

Dependent claims 2, 3, 8, 14, and 15 are allowable over Peyerl in combination with Sunter or Handel at least because these claims require that the variance record be constructed for the measurable quantity and because the response function is determined based on the mathematical relationship to the variance record. As discussed above, Peyerl fails to teach that such a variance record is constructed and that a response function is obtained based on the mathematical relationship. Neither Sunter nor Handel teach creating a variance record from the measurable quantity of an output signal nor obtaining a response function from the mathematical relationship to the variance record. Accordingly, these dependent claims are patentable over Peyerl in view of Sunter and/or Handel for at least these reasons. Furthermore, Handel is nonanalogous art that is not available for combination with Peyerl since Handel is concerned with noise suppression methods of a communications system as opposed to measuring/testing circuitry and methods of Peyerl, and therefore all claims rejected on the combination of Peyerl with Handel are allowable over the combination for this additional reason.

Furthermore, these dependent claims are allowable over the combinations of Peyerl with Sunter and/or Handel for additional reasons. For example, dependent claims 3 and 15 recite that the variance record is a record of jitter variance of an output of a phase locked loop. Sunter does not disclose that a jitter variance record is constructed. Instead, Sunter discloses that jitter is measured and compared to a predetermined value to detect whether the phase locked loop passes or fails, as opposed to creating a record of the variance of the measured jitter. Therefore, the combination of Sunter with Peyerl fails to teach these recitations.

As another example, dependent claims 6, 18, and 23 recite that a power spectral density is found by numerically solving a mathematical relationship between the variance record and response function. Handel fails to teach that a power spectral density is found by numerically solving the relationship between the variance record and response function. Handel only references that a variance is found for the power spectral density of a signal, as opposed to finding the power spectral density based on a variance record of a measurable quantity of a signal. Furthermore, dependent claim 7 recites that the numerical solution is found by utilizing filter banks and corresponding frequency bands. As Handel fails to teach finding a power spectral density by numerically solving the mathematical relationship to the variance record, Handel also fails to teach finding the numerical solution by utilizing filter banks for corresponding frequency bands. Instead, Handel teaches applying filters to sampled values of the signal of the communication system to attenuate the noise component, as opposed to applying filter banks to find a numerical solution to a relationship between a variance record and a response function.

In another example, dependent claims 26 and 30 recite that a model variance record is produced based on a pole-zero function with assumed poles and zeroes and is compared to a constructed variance record. These claims further recite that the poles and zeros are repetitively altered until the model variance record is a best fit to the constructed variance record. Handel fails to teach producing a model variance record, comparing it to a constructed variance record, and repetitively altering the poles and zeroes until the model variance record is a best fit to the constructed variance record. Instead, in relation to variance Handel only refers to finding the variance of the power spectral density of the signal of the communication system, as opposed to constructing a variance record from a measurable quantity.

Rejections Based on Handel

Claim 32

In addition to the application of Handel in combination with Peyerl for the dependent claims discussed above, the Examiner has also rejected claim 32 and dependent claim 33 under 35 U.S.C. 102(b) as being anticipated by Handel.¹ Claim 32 recites that an input signal is provided to a linear system and that a power spectral density is obtained for an output of the linear system produced in response to the input signal.

In applying Handel, the Examiner has relied on step 100 of FIG. 7 showing the supply of an input signal to a linear system. The Examiner then relies on the power spectral density estimate described by Handel. However, this same input signal of step 100 of FIG. 7 is the signal that the power spectral density is based upon rather than a separate output signal, as recited in claim 32. Applicants assert that the signal that is asserted to be the input signal cannot also be asserted to be the output signal. Rather, the input must be a separate signal from the output signal as recited in claim 32. However, because Handel is not involved with testing of a linear system but is instead concerned with the manipulation of a communications signal, Handel does not discuss applying an input signal to a linear system produce a separate output signal. Thus, claim 32 is patentable over Handel.

Dependent claim 33 is also allowable over Handel for at least this reason. However, claim 33 further recites that a variance record of a measurable quantity is constructed and is converted to a power spectral density record according to a mathematical relationship between the variance record and a response function. Handel fails to teach creating a variance record of a measurable quantity, and therefore, also fails to teach converting this variance record to a power spectral density. Instead, Handel merely discusses finding a variance of a power spectral density of the signal of step 100 as opposed to utilizing a variance record to obtain the power spectral density. Thus, claim 33 is allowable over Handel for this additional reason.

¹ The Office Action on page 4, item 4 states that these rejections are based on Peyerl [sic] instead of Handel, but then proceeds to apply Handel instead. Applicants believe the Examiner intended to apply Handel and have responded accordingly.

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Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
612.332.5300

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Signed: Nicholas P. Johns
Name: Nicholas P. Johns
Reg. No.: 48,995
NPJohns:lfalla